

Notice of Allowability

Application No.

10/724,645

Applicant(s)

OSTREM ET AL.

Examiner

Art Unit

Jean B Jeanglaude

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12-01-03.
2. ☒ The allowed claim(s) is/are 1-29.
3. ☒ The drawings filed on 3-22-04 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 04-05-04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.



Jean Bruner Jeanglaude
Primary Examiner

Reasons For Allowance

Claims 1 – 29 are allowable.

1. The following is an examiner's statement of reasons for allowance: in combination with other limitations of the claims the prior arts made of record fail to suggest a method of reducing distortion in a current steering DAC having a plurality of current steering switches, each current steering switch provides a replica of the current steering switch, the replica switch having third and fourth transistors with a common node coupled to a second current source. Also, in combination with other limitations of the claims, the prior arts made of record fail to suggest a method of reducing third harmonic distortion in a current steering DAC having a plurality of current steering switches, each current steering switch provides a replica of the current steering switch, the replica switch having third and fourth transistors with a common node coupled to a second current source, each of the third and fourth transistors also being terminated in a respective DAC load, each of the third and fourth transistors being switched in unison with a respective one of a first and second transistors, the first and second transistors being larger than the third and fourth transistors by factor of n . Moreover, the prior arts made of record fail to suggest a current steering DAC comprising a plurality of controllable current sources, each current source comprises a second current switch having third and fourth transistors with a common node coupled to a second current source, the third and fourth transistors each being coupled to a respective one of a first and second DAC loads and each having a control terminal for steering the current of the

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second current source to the first or the second DAC load responsive to the differential signal as also applied to the control terminals of the third and fourth transistors.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
3. Imamura (US Patent Number 5,528,186) discloses a timing generator using digital signals to obtain accurate delay time and high resolution.
4. Lueng (US Patent Number 5,548,288) discloses a BICMOS current cell and switch for digital-to-analog converters.
5. Whittaker (US patent Number 5,793,231) discloses a current memory cell having bipolar transistor configured as a current source and using field effect transistor for current trimming.
6. Chung et al. (US patent Number 6,339,391) discloses a method and apparatus for optimizing crossover voltage for differential pair switches in a current-steering DAC of the like.
7. Ahmed et al. (US patent Number 6,525,586) discloses a programmable delay element using differential technique.

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8. Bright (US patent Number 6,583,744) discloses a correction circuit for beta mismatch between thermometer encoded and R-2R ladder segments of a current steering DAC.
9. Ganci (US Patent Number 6,621,432) discloses a digital to differential converters and DACs using the same.
10. Hyde et al. (US patent Number 6,664,909) discloses a method and apparatus for trimming high resolution DAC.
11. Mueller et al. (US patent Number 6,703,956) discloses technique for improved linearity of high precision, low-current DACs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Jeanglaude whose telephone number is 571-272-1804. The examiner can normally be reached on Monday - Friday 7:30 A. M. - 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script that reads "Jean Bruner Jeanglaude".

Jean Bruner Jeanglaude
Primary Examiner
July 27, 2004